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Pelvic Lymphocysts Following Retroperitoneal Lymphadenectomy: Retroperitoneal Partial ''No-Closure'' for Ovarian and Endometrial Cancers

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Background and Objectives: Pelvic lymphocysts have been reported mainly following pelvic lymphadenectomy for cervical cancer. We attempted to assess whether retroperitoneal partial ''no-closure'' reduces the incidence of lymphocyst formation following retroperitoneal lymphadenectomy.

Methods: Sixty-one patients with ovarian cancer or endometrial cancer who underwent retroperitoneal lymph node resection were assigned at random to a retroperitoneal partial ''no-closure'' group or a ''closure'' group. The incidence of lymphocysts in the two groups as determined using ultrasonography was compared.

Results: Lymphocysts appeared in 23/61 patients (38%) in total. In the ''closure'' group, the incidence was 52% (16/31), but in the ''no-closure'' group it was only 23% (7/30); the incidence in the ''no-closure'' group was significantly lower ($P < 0.05$). The incidence of postoperative fever was 17% (5/30) in the ''no-closure'' group, which was lower than that in the ''closure'' group (42%, 13/31), but not significantly so ($P < 0.1$). No patients in the ''no-closure'' group required surgical procedures such as needle aspiration or cyst drainage.

Conclusions: Retroperitoneal partial ''no-closure'' appears to be a useful procedure for reducing the incidence of pelvic lymphocysts associated with retroperitoneal lymphadenectomy.

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KEY WORDS: **lymphocysts; retroperitoneal lymph node resection; ovarian cancer; endometrial cancer**

INTRODUCTION

Lymphocysts are fluid-filled spaces that develop after extensive retroperitoneal lymph node resection. In the gynecological field, pelvic lymphocysts have been reported mainly following pelvic lymphadenectomy for cervical cancer [1–7]. In recent years, it has become necessary to determine the involvement of retroperitoneal lymph nodes when determining the clinical stage of ovarian or endometrial cancer according to the International Federation of Gynecology and Obstetrics (FIGO) criteria. Due to the high incidence of involvement of both pelvic and paraaortic lymph nodes in such patients [8,9], determination of retroperitoneal lymph node involvement is necessary not only for clinical staging but also because extensive retroperitoneal lymph node resection, including the paraaortic lymph nodes, is essential to obtain good therapeutic results. The incidence of lymphocysts after operations in these patients appears to have been increasing, although recent publications have shown that leaving the peritoneum open reduces the incidence of lymphocyst formation following retroperito-

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neal lymphadenectomy [10–13]. We conducted a randomized study to compare the incidence of lymphocyst formation in patients with ovarian or endometrial cancer following retroperitoneal lymphadenectomy using the retroperitoneal ''closure'' or partial ''no-closure'' technique.

MATERIALS AND METHODS

Consecutive patients with ovarian or endometrial cancer treated by total hysterectomy plus systemic pelvic and paraaortic lymph node resection from May 1995 to December 1996 in the Obstetrics and Gynecology Department of Jichi Medical School were entered in the study. Lymphadenectomy began with resection of the pelvic lymph nodes, including the external iliac, interiliac, inguinal, obturator, presacral, and common iliac nodes, followed by resection of the paraaortic lymph nodes along the aorta and the inferior vena cava up to the site of divergence of the renal vein (to the upper margin 1–2 cm above the inferior mesenteric artery in patients with endometrial cancer) (''systemic node dissection''). In all of the patients, one retroperitoneal suction drain was placed in each paravesical space via the vagina and the vaginal vault was closed. When the retroperitoneum was sutured, the patients were assigned at random to a retroperitoneal partial ''no-closure'' group or a ''closure'' group. In those patients randomized to the ''no-closure'' group, an open space of about 3 cm in diameter was left in each iliac fossa (Fig. 1).

Prophylactic antibiotics were administered intravenously to all patients for 5 days, but no heparin was administered. Postoperative assessment of temperature, passage of flatus, duration of drainage, amount of fluid drained, and any untoward complications was made daily in each patient. Fever was defined as a temperature of $\geqslant$38°C for $\geqslant$48 hr based on Gynecologic Oncology Group criteria [14]. The drains were usually removed when fluid loss was <50 ml/day.

Transabdominal and transvaginal ultrasonography were performed weekly for 12 weeks after surgery in all patients to identify any asymptomatic lymphocysts. Thin-walled, anechoic cyst structures arising in the pelvic cavity were assumed to be lymphocysts. The lymphocysts were examined with respect to diameter and number of days until onset, and incidental symptoms such as pelvic pain and leg swelling.

Differences between patient groups were tested by the χ^2 test or Student *t*-test. $P < 0.05$ was considered significant, and was determined by means of a two-tailed test.

RESULTS

Sixty-one total hysterectomies with systemic pelvic and paraaortic lymph node resection were performed during the study period: 33 were for ovarian cancer and 28 for endometrial cancer. Thirty-one of these 61 patients were randomized to the ''closure'' group and 30 to the ''no-closure'' group. The clinical and pathologic characteristics, including the type of surgery and the presence of lymph node metastases, are listed in Table I. The two groups showed no significant differences with respect to age, body weight, preoperative serum albumin, or FIGO stage, or for type of surgery, operation time, estimated blood loss, perioperative blood transfusion, number of nodes resected, and number of metastasis-positive nodes.

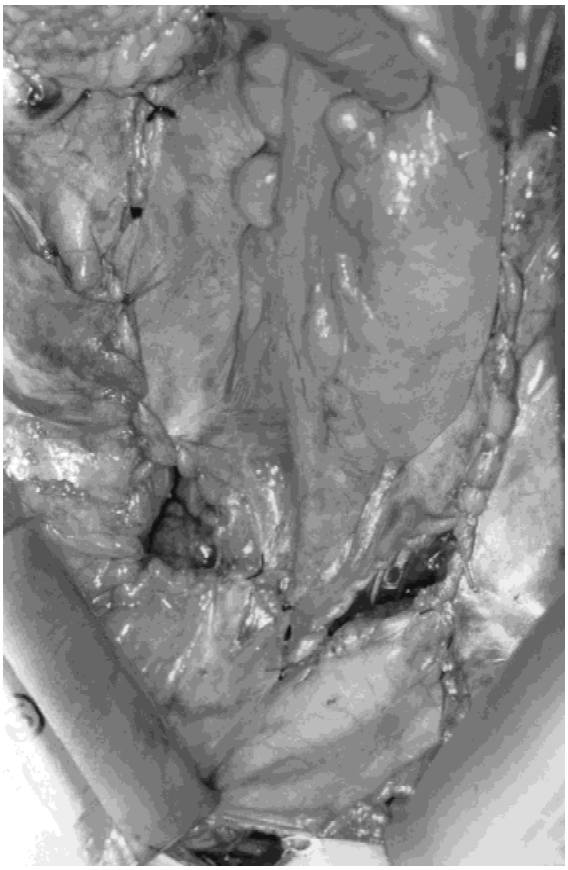

Fig. 1. The open space of approximately 3 cm in diameter in each iliac fossa that was left in patients in the retroperitoneal ''no-closure'' group.

Table II shows the postoperative morbidity and pelvic lymphocyst formation in the ''closure'' and ''no-closure'' groups. The incidence of postoperative fever ($\geqslant$38°C for $\geqslant$2 days) was 42% (13/31) in the ''closure'' group, but only 17% (5/30) in the ''no-closure'' group; this difference was not significant ($P < 0.1$). There were no significant differences between the two groups in terms of passage of flatus, postoperative ileus, duration of drainage, or total drained fluid volume.

Lymphocysts appeared in 16/31 patients (52%) in the ''closure'' group, but in only 7/30 patients (23%) in the ''no-closure'' group; the latter incidence was significantly lower ($P < 0.05$) (Table II). Lymphocysts associated with symptoms such as fever, pelvic pain, or leg

TABLE I. Clinicopathologic Status of the 61 Women Undergoing Hysterectomy and Pelvic and Paraaortic Lymph Node Resection*

	''Closure'' group (n = 31)	''No-closure'' group (n = 30)	*P*
Age (years)	55.2 ± 13.9	55.5 ± 11.8	NS
Body weight (kg)	54.4 ± 9.7	52.9 ± 10.0	NS
Preoperative serum albumin (g/dl)	4.46 ± 0.54	4.42 ± 0.59	NS
FIGO stage (n)			
Ovary			<0.1
I	9	4	
II	0	0	
III	5	5	
IV	3	7	
Corpus			NS
I	10	11	
II	0	2	
III	4	1	
Operative factor			
Type of surgery			NS
ATH, SO, LN (±OMT)	25	22	
Radical, LN	2	2	
ATH, SO, LN, metastatic disease resection	4	6	
Operation time (min)	284 ± 93	271 ± 62	NS
Estimated blood loss (ml)	1,267 ± 1,133	1,417 ± 1,263	NS
Perioperative blood transfusion (ml)	576 ± 707	748 ± 884	NS
Lymph node status			
Median No. of nodes resected (range)	43 (23–75)	45 (25–73)	NS
Positive/negative	6/25	10/20	NS

*ATH = abdominal total hysterectomy; SO = salpingo-oophorectomy; LN = pelvic and paraaortic lymph node resection; OMT = omentectomy; NS = not significant.

TABLE II. Postoperative Morbidity and Pelvic Lymphocyst Formation in the 61 Women Undergoing Hysterectomy and Pelvic and Paraaortic Lymph Node Resection

	''Closure'' group (n = 31)	''No closure'' group (n = 30)	*P*
Fever (⩾38°C for ⩾2 days) (n)	13 (42%)	5 (17%)	<0.1
Passage of flatus (days)	2.96 ± 0.59	3.07 ± 0.70	NS
Postoperative ileus (n)	7 (23%)	5 (17%)	NS
Duration of drainage (days)	5.9 ± 1.7	5.6 ± 1.7	NS
Total drained fluid volume (ml)	736 ± 536	629 ± 661	NS
Lymphocysts (n)	16 (52%)	7 (23%)	<0.05
Symptomatic (n)	11 (35%)	4 (13%)	<0.1
Mean diameter (cm)	7.2 ± 3.3	6.1 ± 1.3	NS
Days to lymphocysts	23.8 ± 20.1	17.1 ± 8.1	NS

swelling occurred in 11/31 patients (35%) in the ''closure'' group and 4/30 patients (13%) in the ''no-closure'' group ($P < 0.1$). Two patients in the ''closure group'' had fever of >38.0°C lasting at least 3 days which was believed to be due to lymphocyst infection. Needle aspiration was considered to be necessary due to developing pelvic pain or leg edema. One patient in the ''closure'' group had fever four times during the 5 months after surgery. This was believed to be due to lymphocyst infection, and thus the lymphocysts were drained.

The mean diameter of the cysts and number of days after surgery until onset showed no significant differences between the two groups. The cysts were bilateral in five cases: three in the ''closure'' group and two in the ''no-closure'' group. The incidence of lymphocysts by disease was 33% (11/33) for ovarian cancer and 43% (12/28) for endometrial cancer; differences between the groups were not significant.

DISCUSSION

Lymphocysts following lymphadenectomy are not fatal, but they often appear together with symptoms such as fever, pelvic pain, and leg swelling, and the quality of life (QOL) of patients deteriorates. In the field of gynecology, lymphocysts associated with radical hysterectomy in patients with cervical cancer have been reported.

There are major differences in the incidence of lymphocysts associated with such operations, ranging from 0.9% to 58.5%, depending on the investigator [1–7]. The reason for this wide difference is considered to be differences in diagnostic methods. The incidence is generally low in reports where clinical palpation was used to identify the cysts [1–4], but is high (22–35%) in reports using ultrasound examinations [5,10,11].

In the present study, the overall incidence of lymphocysts was 38% (23/61), which was high. One of the reasons for this was extensive resection of lymph nodes, including the paraaortic lymph nodes, in subjects with ovarian or endometrial cancer. Petru et al. [15] reported a lymphocyst incidence of 20% in patients with cervical cancer and 32% in patients with ovarian cancer, which was significantly higher. This difference appears to arise because a more extensive procedure is used for ovarian cancer. The second reason for the high incidence in the present study is that ultrasound examinations were performed regularly even in asymptomatic patients in an attempt to discover lymphocysts. Among the 23 patients with lymphocysts, 8 were asymptomatic, and in these patients cysts were discovered by ultrasonography.

Leaving the retroperitoneum open allows free flow of lymphatic fluid into the peritoneal cavity and peritoneal resorption of the lymph, resulting in a lower incidence of cyst formation. Some investigators have reported reduced incidences of lymphocysts when procedures leaving the retroperitoneum open were used in patients undergoing lymphadenectomy [10,11]. However, these studies were not randomized. The present study was a randomized study of two groups: a retroperitoneal ''closure'' group and a ''no-closure'' group. The ''no-closure'' group showed a significantly lower incidence of lymphocysts than the ''closure'' group. The incidence of fever in the ''no-closure'' group was not significantly different from that in the ''closure'' group, but was low. The incidence of other symptoms such as pelvic pain and leg swelling caused by lymphocysts also tended to be lower, and no patients required surgical treatment such as needle aspiration or drainage in the ''no-closure'' group. Partial ''no-closure'' of the retroperitoneum appeared to be a useful procedure for reducing postoperative lymphocysts.

In this study, ovarian and uterine cancer patients were considered together, although it would be ideal to consider each disease separately. However, there is little difference in the retroperitoneal lymphadenectomy technique used in ovarian and uterine cancer, and there were no significant differences between the numbers of ovarian and uterine cancer or the clinical stage of the patients in the ''closure'' and ''no-closure'' groups. Consequently, it is believed that the two groups can be compared.

In the present study, we left a partially open space in each iliac fossa. There is also a procedure in which the retroperitoneum is not sutured at all [10–13], but it is not clear which method is the most useful. This point, including a comparison of the severity of postoperative peritoneal adhesion, is a topic for future study. Another topic is the necessity of a retroperitoneal suction drain with such ''no-closure'' procedures [12,13]. Measures against lymphocysts following retroperitoneal lymphadenectomy are still an important consideration in the field of gynecology.

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